

REMARKS

Withdrawn Claims

In the Office Action of July 8, 2003, claims 13, 18, and 27 were withdrawn from consideration. Claims 13 and 27 are now amended to be process claims dependent on claim 1. Thus, applicants request that claims 13 and 27 be considered with the other pending process claims.

Amendments

Claims 13 and 27 are amended to depend, directly or indirectly, on claim 1. Claims 1, 9, 11, 13, 15 and 28 are amended to correct obvious errors and to eliminate superfluous language. These amendments do not narrow the scope of the claims. New claims 29-37 are directed to further aspects of applicants' invention and are supported throughout the disclosure. See, for example, page 4, lines 22-24; page 5, lines 1-4; page 13, lines 20-22; and page 14, lines 9-15.

Rejection under 35 USC §103

Claims 1-12, 14-17, and 19-26 are rejected as allegedly being obvious in view of Benazzi et al. (US 6,191,333). This rejection is respectfully traversed.

US '333 discloses a catalyst that contains at least one dioctahedral phyllosilicate 2:1, having a reticulate distance d_{001} equal to at least 2 nanometers, and which includes pillars based on at least one oxide from the elements of groups IVB, VB, VIB, VIII, IB, IIB, IIA, IVA, or combinations thereof. The catalyst is said to be useful for isomerization of a feedstock that contains mainly normal paraffins having 5 to 10 carbon atoms per molecule. See column 2, lines 29-59.

In the catalyst of US '333, the dioctahedral phyllosilicates 2:1 preferably have a reticulate distance d_{001} equal to least 26.5×10^{-10} m, more preferably equal to least 28×10^{-10} m, and most preferably equal to least 30×10^{-10} m. See column 3, lines 3-10. Compare, e.g., applicants' claims 7 and 13.

As noted above, the feedstock to be treated in US '333 is one that contains mainly normal paraffins having 5 to 10 carbon atoms per molecule. The only feedstock mentioned in the

Examples is in Example 6 wherein hydroisomerization is performed on an n-heptane feedstock to form products that are C1 to C6 cracking products, isomers of n-heptane, or products resulting from aromatization of n-heptane.

In the rejection it is acknowledged that US '633 discloses a process for isomerizing a hydrocarbon feed that contains paraffins having 5 to 10 carbon atoms. It is argued in the rejection that isomerization will result in an improved pour point. However, no support is given for this conclusion. Moreover, there is nothing to suggest that the feedstocks described in US '333 can be assessed or are typically assessed in terms of pour point, where pour point is the lowest temperature at which a liquid will flow from an inverted test container. See also the attached Declaration.

While it is acknowledged in the rejection that US '333 does not disclose Applicants' feed composition, it is alleged that the feed of US '633 is similar and thus isomerization of Applicants' feed would be expected. However, this assertion does not describe any motivation that would lead one of ordinary skill in the art to modify the process of US '333 in such a manner as to use a feedstock in accordance with Applicants' claimed invention. Moreover, nothing in the disclosure of US '333 suggests that by performing the process of Applicants' claimed invention on a hydrocarbon comprised of paraffins containing more than 10 carbon atoms one could achieve an improvement in pour point.

US '333 specifically discloses that the types of catalysts that have been developed are based on the number of carbon atoms present in the linear paraffins to be isomerised. See, column 1, lines 30-33. In light of this disclosure, there is clearly no motivation that which would lead one of ordinary skill in the art to modify the catalytic process used in US '333 for the treatment of a feedstock comprising paraffins containing more than 10 carbon atoms.

It is also acknowledged in the rejection that US '333 does not disclose the hydrogenating metals recited in Applicants' claims. See, for example, claim 15 and new claim 30. However, it is alleged that it would be obvious to modify the process of US '333 so as to utilize a group VI metal, since such metals are effective hydrogenation metals. However, the assertion does not provide motivation to modify the catalyst of US '333. There is nothing to suggest that the presence of a group VI metal would be advantageous in the type of catalyst described by US '333 for the manner in which it is used in US '333.

In addition, nothing within US '333 describes nitrogen content, sulphur content and/or metal content of the feedstock to be treated. Compare Applicants' claim 24.

In view of the above remarks, it is respectfully submitted that US '333 fails to provide sufficient motivation that would lead one of ordinary skill in the art to modify the process described therein in such a manner as to arrive at an embodiment in accordance with Applicants' claimed invention. Withdrawal of the rejection under 35 U.S.C. § 103 is, thus, respectfully requested.

To further demonstrate the non-obvious character of Applicants' invention, enclosed herewith is a Rule 132 Declaration by Mr. Germain Martino. In the Declaration, test results are presented for a catalyst C1 prepared according to examples 1 and 2 of the US '333 (and examples of 1 and 2 of the instant application). This catalyst was used to treat two different feedstocks in two different tests.

In test 1, one feedstock was n-heptane, and the treatment conditions were 250°C, 1MPa and an hourly space velocity of 1h^{-1} . The hydrogen/n-heptane ratio was 14. Under these same conditions, a hydrocracking residue as described in the example 5 of the instant application was also tested, using the same catalyst C1. This hydrocracking residue contained 62% n-paraffins wherein practically all paraffins had more than 10 carbon atoms. For the n-heptane feed, the test results were similar to those presented in example 6 of US '333. However, for the feedstock of hydrocracking residue, the catalyst was rapidly deactivated, and the test resulted in an increase of only a few points in viscosity index.

In test 2, the same catalyst was used to treat the same feedstocks. However, the process conditions were in accordance with example 5 of the instant application, i.e., 275°C, 12MPa, hourly space velocity of 1h^{-1} and 1,000 liters of hydrogen per liter of feedstock. For the n-heptane feed, the pressure increased whereby the conversion was reduced strongly. To enhance conversion, the temperature was increased to 268°C. The results were a 61% selectivity for isomerization and 38% selectivity for cracking. On the other hand, for the hydrocracking residue feedstock, the resultant product had a viscosity index of 118, a pour point of -13°C, and an oil yield of 68 weight percent, and a converted product (370°C) of 32 weight percent. These results clearly show that US '333 provides no suggestion of Applicants' claimed process.

Further, it is noted that in the Declaration Mr. Martino indicates that it is not possible to measure the viscosity index or a pour point for C1-C10 paraffins since these are non-viscous liquids.

In view of the above remarks, it is respectfully submitted that Benazzi et al. fails to provide sufficient motivation which would lead one of ordinary skill in the art to modify the process described therein in such a manner as to arrive at an embodiment in accordance with Applicants' claimed invention. Withdrawal of the rejection under 35 U.S.C. § 103 is respectfully requested.

Obviousness-Type Double Patenting

Claims 1-12, 14-17, and 19-26 are rejected under the judicial doctrine of obviousness-type double patenting as allegedly being obvious in view of claims 16-18 and 22-28 of Benazzi et al. (US 6,191,333). This rejection is also respectfully traversed.

For the reasons discussed above, it is respectfully submitted that claims 16-18 and 22-28 of US '333 fail to render obvious Applicants' claimed invention. Withdrawal of the obviousness-type double patenting rejection is respectfully requested.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,



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Filed: November 6, 2003